



IAN 23 2017

January 20, 2017

Reed Miner
Department of Environmental Quality
Petroleum Tank Cleanup Section
655 Timberwolf Parkway, Suite 3
Kalispell, MT 59901

Department of
Environmental Quality
Kalispell Regional Office

Re: *Additional Corrective Action and Work Plan for the Petroleum Release at the Former Long's Main Stop (Kelly Rae's), 25 Batavia Lane, Kalispell, Flathead County, Montana; Facility ID 1506101, Release 1850, Work Plan 10486, AWC Project No. 494-12*

Dear Reed:

Applied Water Consulting (AWC) is pleased to provide this Standardized Generic Applications Corrective Action Plan (CAP) AC-07 and budget on behalf of Mr. Tab Young and Ms. Marcie Riley. This work plan is being submitted pursuant to your letter dated December 16, 2016. The purpose of the proposed work is to monitor groundwater, assess site biodegradation factors, and to evaluate site hydraulic conductivity by conducting slug tests.

Scope of Work

Prior to implementing the tasks below, AWC will conduct a project meeting with DEQ and the property owners to discuss cleanup options and a long-term remediation plan for the site. The following tasks have been proposed to accomplish the above stated purpose:

Groundwater Monitoring

Groundwater monitoring will be conducted at the site to assess biodegradation potential and evaluate groundwater contamination. Static water levels will be measured in the site wells prior to groundwater sample collection. Groundwater samples will be collected from the eleven site monitoring wells including MW-N1, MW-N3, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12, and MW-13. Standard sampling and decontamination protocols will be followed. Field parameters including dissolved oxygen, specific conductivity, pH, redox potential, and temperature will be measured in the purge water prior to sample collection. Groundwater samples will be submitted for analysis of volatile petroleum hydrocarbons (VPH), extractable petroleum hydrocarbons (EPH), 1,2-ethylene-dibromide (EDB) by method E504.1, and method 8260B for 1,2-dichloroethane (DCA). Groundwater samples will also be submitted for intrinsic biodegradation parameters including ferrous iron, nitrate, sulfate, and methane. In addition to these parameters, AWC also recommends analyzing the groundwater samples for manganese.

Hydraulic Conductivity Assessment

The hydraulic conductivity of the underlying water-bearing sediments will be determined by conducting slug tests in three of the onsite monitoring wells that include MW-N1, MW-11, and MW-12. These wells are completed in native sediments and are spatially distributed across the site. Hydraulic conductivity values will be derived by performing at least three slug tests on each monitoring well, analyzing the slug test data utilizing both the Bower-Rice and Hvorslev methods, and calculating intrinsic hydraulic conductivity and groundwater seepage rates.

A pressure-transducer coupled to a data-logger will be utilized to monitor water-level changes in the wells during slug testing. The transducer will be programmed to collect measurements at one-second intervals. The test method will consist of inserting either a new disposable bailer or a sealed and weighted bailer into the well (slug-in) and then retracting it after the water elevation has stabilized (slug-out). This procedure will be continued until a minimum of three tests per well have been performed (a minimum of nine tests for the site). If additional time is available, additional tests will be performed. Slug testing will occur in conformance with AWCs standard operating procedures.

Report Preparation

Following completion of the slug testing and receipt of the groundwater analytical results, AWC will prepare a Standardized Abbreviated Generic Applications Report (AR-07). The report will contain the results of the groundwater monitoring event, historical analytical and water elevation tables, analysis of the slug test data, water table maps, and contaminant concentration maps. The report will also contain a cleanup alternatives matrix. The total estimated cost to complete the above proposed tasks is \$16,527.85. An itemized budget for this work plan is presented in **Attachment A**.

If you have any questions regarding this submittal or other project management activities, please do not hesitate to contact me at (406) 756-2550.

Sincerely,



Jamie Graham
Staff Hydrogeologist

c: Tab Young w/attachments

ATTACHMENT A

PROJECT BUDGET

*Work Plan for Groundwater Monitoring and Hydraulic Conductivity Testing for
the Petroleum Release at Kelly Raes (Former Longs Conoco)
Kalispell, Montana*

Applied Water Consulting Project Budget Sheet				(Montana Petro Board Approved Rates)			
Project Name:	Former Longs Conoco			Facility ID #	15-06101		
Location:	Kalispell, Montana			Release #	1850		
				Work Plan #	10486		
Type of Project:	Groundwater Monitoring						
		Description	Rate	Units	# Units		Totals
Abbreviated Corrective Action Plan (CAP AC-07)							
	Staff Scientist	Work plan preparation	\$ 98.00	hrs.	5		\$ 490.00
	Word Processor		\$ 68.00	hrs.	0.5		\$ 34.00
	Office - copies, postage		\$ 19.00		1		\$ 19.00
Subtotal							\$ 543.00
Update Site Health and Safety Plan							
	Staff Scientist	update site health and safety plan	\$ 98.00	hrs.	4		\$ 392.00
Subtotal							\$ 392.00
Project Management: Project meetings, Coordination with property owners & DEQ, Coordinate with laboratory							
	Project Scientist	prepare for and addend project meetings, coordination with owner, coordinate with DEQ	\$ 125.00	hrs.	5		\$ 625.00
	Staff Scientist	project meetings, coordination with owner, coordinate with DEQ, coordinate with laboratory, coordinate sampling and hydraulic conductivity testing	\$ 98.00	hrs.	7		\$ 686.00
	mileage	drive to meetings with DEQ and owner	\$ 0.59	mile	10		\$ 5.90
Subtotal							\$ 1,311.00
Groundwater Sampling Event: Collect, Package, and Ship Samples							
	Tech III	Groundwater Sample Collection	\$ 180.00	well	11		\$ 1,980.00
	Tech III	Travel Time, drive to and from site, drive to ship samples, load and unload equipment	\$ 93.50	hrs.	2		\$ 187.00
Mileage	Light Duty	Mileage	\$ 0.59	miles	30		\$ 17.70
Subtotal							\$ 2,184.70
Groundwater Analysis							
	VPH		\$ 120.00	sample	11		\$ 1,320.00
	EPH Screen		\$ 75.00	sample	11		\$ 825.00
	EPH Fractionation		\$ 150.00	sample	4		\$ 600.00
	EOB		\$ 130.00	sample	11		\$ 1,430.00
	DCA		\$ 150.00	sample	11		\$ 1,650.00
	Ferrous Iron		\$ 20.00	sample	11		\$ 220.00
	Manganese		\$ 20.00	sample	11		\$ 220.00
	Methane		\$ 50.00	sample	11		\$ 550.00
	Nitrate		\$ 25.00	sample	11		\$ 275.00
	Sulfate		\$ 20.00	sample	11		\$ 220.00
	PTRCB sample fee		\$ 10.00	sample	11		\$ 110.00
Subtotal							\$ 7,420.00
Hydraulic Conductivity Evaluation							
	Staff Scientist	conduct three slug tests each on three site monitoring wells	\$ 98.00	hour	10		\$ 980.00
	Staff Scientist	load & unload equipment, travel time	\$ 98.00	hour	1		\$ 98.00
	Light Duty	Mileage	\$ 0.59	miles	30		\$ 17.70
	Equipment	Transducer	\$ 12.75	hr.	9		\$ 114.75
		Field Computer	\$ 6.30	hr.	9		\$ 56.70
		Disposable bailers	\$ 14.00	baller	3		\$ 42.00
Subtotal							\$ 1,309.15
Generic Applications Groundwater Monitoring Report (MR-07)							
labor	Project Scientist		\$ 125.00	hrs.	1		\$ 125.00
	Staff Scientist		\$ 98.00	hrs.	12		\$ 1,176.00
	CAD Draftsperson		\$ 90.00	hrs.	3		\$ 270.00
	Project Scientist		\$ 125.00	hrs.	1		\$ 125.00
	Word Processor		\$ 68.00	hrs.	1		\$ 68.00
Office	Phone, copies, postage		\$ 36.00		1		\$ 36.00
Subtotal							\$ 1,800.00
Report Sections on Site Biodegradation Analyses							
	Staff Scientist	biodegradation parameter data interpretation and chart preparation	\$ 98.00	hrs.	4		\$ 392.00
Subtotal							\$ 392.00
Cleanup Alternatives Matrix							
	Staff Scientist	prepare cleanup alternatives matrix	\$ 98.00	hrs.	4		\$ 392.00
Subtotal							\$ 392.00
Report Sections on Site Hydraulic Conductivity							
	Staff Scientist	slug test data interpretation and analysis	\$ 98.00	hrs.	5		\$ 490.00
	Staff Scientist	prepare report section on hydraulic conductivity	\$ 98.00	hrs.	3		\$ 294.00
Subtotal							\$ 784.00
Project Total							\$16,527.85